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DR. RAYMOND WHEELER'S COLLECTION OF ODONATA FROM THE FEDERATED MALAY STATES, WITH THE DESCRIPTION OF A NEW GENUS AND TWO NEW SPECIES

By Lt.-Col. F. C. Fraser, I.M.S. Retd., F.R.E.S.

I am indebted to Dr. Raymond Wheeler for the opportunity of reporting on a collection of some 104 specimens of Odonata which he and others collected in the northern parts of the Federated Malay States. Dr. Wheeler has sent me some brief notes bearing on the climatic conditions and nature of the terrain in the districts where the insects were collected.

The area covered embraces the northern half of Malaya between the parallels 3°–7° and comprises Province Wellesley, South Kedah and Perlis, as well as the central mountain chain of Malaya, including Fraser's Hill and the Cameron Highlands. A few specimens were also collected in Penang Island and the State of Perak. Most were taken at or in the neighbourhood of paddy fields near sea-level, whilst others come from montane or submontane areas, up to an altitude of over 4000 ft. and amid thick jungle.

The climate is closely similar to that prevailing on the west coast of India and Ceylon, being uniformly hot and very humid, with a prevailing temperature at sea-level round about 80° F. and with but little seasonal change throughout the year. Rainfall in the plains averages about 100 inches per annum, but this rises to double or more than double in the montane districts. In Penang and the north-west area there is an especially wet season during October to December followed by a spell of dry weather extending into April.

Notes are given on the following localities in which collecting was carried out :—

Reservoir, Bukit (hill) Mertajam. A small lake about 300 ft. up the hill, in the centre of Province Wellesley. This range rises to 1700 ft. and is well watered and covered with jungle, both ideal conditions for the pursuit of entomology.

Kuala (mouth or tributary of a river) Ketil, S. Kedah. Low-lying jungle in swampy area amid rice fields and rubber (*Hevea*) plantations.

Pine Tree Hill on the Fraser's Hill plateau. A path running through the dense jungle covering the hills which furnished many rare Lepidoptera etc.

Butterworth. Lies opposite Penang on the mainland; coast low and sandy, given over to coconut plantations. The garden of a bungalow furnished specimens here, among them the type of a new species—*Mortonagrion arthuri*, which was taken by Dr. Wheeler's son, aged four years, surely a record in the annals of entomology.

Kenas Dam, near Kuala Kangsar, central Perak, *c.* 300 ft. A jungle stream feeds the waters behind the dam, which flows from an isolated Gunong (mountain), the Bubu range, which rises to 6000 ft. Many butterflies and dragonflies flocked to this spot.

Bukit Kutu. A mountain some 3500 ft. near western road to Fraser's Hill. It is situated in Selangor, about 40 miles north of Kuala Lumpur.

Ramaswami Waterfall. About the 14th mile, and *c.* 1100 ft., along the Cameron Highlands road. Stream and fall pass down a gorge in thick jungle, but there are shallows at the foot of the fall provided with a mixture of boulders, such as tropical insects love. The rare *Kallima limborgi* was found here, and also the magnificent new dragonfly *Gomphidictinus wheeleri*.
Maxwell's Hill, 4000 ft. upwards, Taipeng, Perak.

The collection of 104 specimens is made up of 35 genera and 44 species, of which one genus and two species are new to science, whilst quite a number of others are actually rare or rare in collections. Laidlaw records 158 species from the Malay Peninsula : to this may now be added 4 more, viz., *Calicnemia rectangulata* Laidlaw (described in 1932), *Drepanosticta fontinalis* Lieftinck, *Mortonagrion arthuri* sp. n., and *Gomphidictinus wheeleri* sp. n., bringing the total to 162.

The types of the newly described species are to be presented to the British Museum.

Suborder Zygoptera.

1. *Drepanosticta fontinalis* Lieftinck, race *wheeleri*.

1 male, Reservoir, Bukit Mertajam, 24.v.36. Differs from type in having the lateral black band on thorax constricted at the level of the spiracle, and also by a lower nodal index—$\frac{13 \mid 12}{11 \mid 11}$. The type came from Kelantan and was the sole specimen known hitherto; when comparing the present specimen with two supposed specimens of the closely allied *D. sharpi* Laidlaw, I found one of these was actually a third specimen of *fontinalis*, taken by myself in the Botanical Gardens, Penang, 5.v.34. The nodal index in this specimen is higher—$\frac{16 \mid 15}{14 \mid 14}$. In Dr. Wheeler's specimen, segment 8 is apparently all black, and 9 all blue. The inferior appendage has the apex reddish-brown, middle portion and whole of dorsum glossy black and ventral surface white. The species is most easily determined from *D. sharpi* by the pterostigma followed by a single row of cells (2 rows in *sharpi*).

2. *Prodasineura laidlawi* (Förster) = *Disparoneura notostigma laidlawi* Förster.

2 males, 1 female, near Goa (cave) Berangin, Perlis, 13.ii.37 (1 pair *in cop.*); 1 female, Waterfall Road, near Botanic Gardens, Penang; 1 female Bukit (hill) Mertajam, 16.xii.35. All agree with Förster's description and with a male identified by Laidlaw. The measurements were omitted by the author and are :—Male, abdomen 30 mm., hind-wing 19 mm.; female, abdomen 31 mm., hind-wing 21 mm.

3. *Prodasineura notostigma* (Selys) = *Disparoneura notostigma* Selys.

1 male, Kuala Ketil, Kedah jungle, 22.xii.35. A species known from very few specimens and confined to Malaya. Differs from allied species by its very slender abdomen.

4. *Calicnemia rectangulata* (Laidlaw) (fig. 1, *c*).

2 males, Fraser's Hill, Pine Tree Hill, path through dense jungle, 4000 ft., 10.iv.36. A species distinguished from others in the genus by having segments

2, 3 and the extreme base of 4 blood red, all others black; base of inferior anal appendages bright ochreous. A male, which I have from Dr. Laidlaw, has segments 2 to 5 and nearly the whole of 6 blood red, so that some variability appears to occur; otherwise the colouring and the complicated nature of the anal appendages agree with type. Confined to Malaya; not common.

5. *Copera marginipes* (Rambur).

1 male and 3 females, by Rest House, Leng-gong, 5.xii.37, and Bukit Panchore, 20.xii.35. A widely distributed and common species in the Orient. All the present specimens are teneral and palely coloured.

6. *Aciagrion hisopa* (Selys) = *Pseudagrion hisopa* Selys.

2 females, one " to light," Runnymede Hotel, Penang, 31.v.37, and the other on Penang Hill, 2500 ft., 25.ii.36. A common and widely distributed species throughout the Orient.

7. *Archibasis melanocyana* (Selys) = *Stenobasis melanocyana* Selys.

A single male at Reservoir, Bukit Mertajam, Prov. Wellesley, 14.xii.35. All species of this genus are uncommon; all appear to be very closely related and may possibly be but races of one species. The present species is distributed from Burma, through Malaya to Sumatra and Borneo.

8. *Ceriagrion cerinorubellum* (Brauer).

1 male, Forest Reserve, Trolak, Perak, 25.vi.37. Locally common: distributed widely through S. Asia up to 3000 ft.

9. *Agriocnemis pygmaea* (Rambur).

1 female, Langkawi Is., in jungle, *c.* 100 ft., 1.viii.37. Remarks similar to the last but extends into the Pacific Is.

10. **Mortonagrion arthuri** sp. n. (fig. 1, *a* and *b*).

1 male, the type, in garden at Butterworth (*A. Wheeler*).

Male. Abdomen 26 mm. Hind-wing 17 mm.

Head: labium pale brown, labrum and rest of head uniform ferruginous without dark markings; paler areas behind eyes may indicate bluish postocular spots. Prothorax dark brown, paler laterally. Thorax warm brown, paler laterally, marked with diffuse blackish-brown spots (which may, however, be artifacts, as they do not coincide on the two sides). Legs pale yellowish, inner sides of tibiae blackish, very short, tibial spines few but robust; femoral spines few, weak; tarsal claws short and robust. Wings hyaline, venation as for genus but arculus situated very far distal to outer antenodal; 10 to 11 postnodals in fore-wings, 9 in the hind-wings; Riii and IRii arising at the levels of the 5th and 8th postnodals respectively: pterostigma diamond-shaped with distal and posterior sides forming a continuous convexity, about equal in fore- and hind-wings, pale ochreous with dark centres. Abdomen pale brown with blackish-brown and pale lilaceous markings: segment 1 with a basal quadrate blackish spot, segment 2 with an ill-defined subdorsal band and a broad subapical band blackish-brown, the two markings separated: segments 3 to 7 with broad subapical blackish-brown annules preceded by lilaceous annules: bases of these same segments ringed with lilaceous; segment 8 with its basal two-thirds lilaceous and carina finely black: last two segments black, segment 10 with two very robust spines on its apical dorsal border separated by a narrow notch and resembling, rather closely,

similar organs in *Onychargia*. Anal appendages dark brown tipped with black; superiors about two-thirds the length of segment 10, triangularly foliate, hollowed out inwardly and with a large rounded tubercle on inner side at base; inferiors as long as segment 10, broad at base, tapering rapidly, acuminate at apex, furnished with a robust obtuse spine on the superior external side near the base.

This new species, which makes the eighth to be described, is easily distinguished from all others of the genus by the possession of the two tubercles on segment 10. Its anal appendages are also quite different from other species; in colour it rather resembles *M. varralli* Fraser, also a coastal species occurring among palm groves.

11. *Onychargia atrocyana* Selys.

1 female, Malakoff Estate, Kuala Ketil, Kedah, 9.ii.36. A submontane species distributed from W. India to Malaysia and occurring in extremely localised colonies. Moderately rare.

12. *Libellago lineata* (Burmeister) = *Calopteryx lineata* Burmeister, *Micromerus lineatus* Rambur.

1 female, jungle in Kuala Ketil, Kedah, 22.xii.35. A species inhabiting submontane streams and distributed throughout Indo-China and Java.

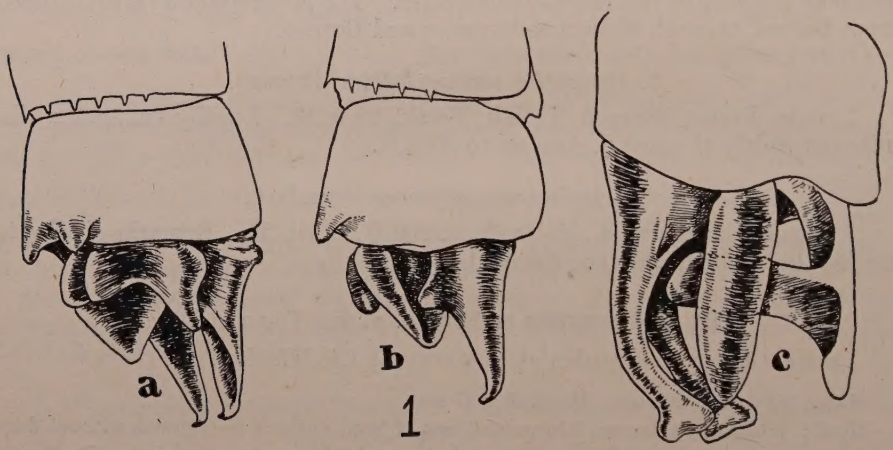

Fig. 1.—*a*. Dorsolateral view of anal appendages of *Mortonagrion arthuri* sp. n. *b*. Right lateral view of the appendages of the same species. *c*. Left dorsolateral view of the anal appendages of *Calicnemia rectangulata* (Laidlaw).

13. *Rhinocypha fenestrella* Rambur.

1 male, Taipeng Pass, jungle road, *c*. 1000 ft., 9.vi.37; 2 males, 1 female, Penang Waterfall, 21.iii.37; 1 female, near Tarjong, Rambutan, Perak, 14.iii.37; 1 male, 1 female, Penang Hill, near waterfall, *c*. 500 ft., 29.viii.37; 1 male, Taipeng Pass, 13.iv.37; 1 male, same locality, 29.xii.35. A submontane, riverine species, locally common in Malaya.

14. *Allophaea ochracea* (Selys) = *Euphaea ochracea* Selys.

Moderately rare, distributed from Bengal and Assam to Indo-China; 1 male, Waterfall, 14th mile, Cameron Highlands Road, 11.ix.37; 1 male, near foot of Maxwell's Hill, Taipeng Pass, 6.ii.36; 1 pair, Taipeng Pass, 1.i.38.

15. *Dysphaea dimidiata limbata* Selys.

1 male, Kenas Dam near Kuala Kangsar, *c.* 300 ft., 9.i.38 (*Jackman*). A very local and somewhat rare species extending from Malaya to Borneo. These insects have a habit of perching on rocks or half-submerged trunks of trees far out in midstream, so that they are often most difficult to secure. Females are extremely rare.

16. *Vestalis amoena* Selys.

5 males, 2 females from same locality as the last. Occurs in large colonies and is confined to Malaya and Indo-China.

17. *Neurobasis chinensis* (L.).

2 males, Kenas Dam, Kuala Kangsar, 9.i.38, and at 14th mile, Waterfall Road, Cameron Highlands, coll. Hayward, 30.i.38. A common and widely distributed species throughout the Orient.

18. *Climacobasis modesta* (Laidlaw) = *Echo modesta* Laidlaw.

2 females, Bukit Kutu, *c.* 2000 ft., 26.vi.37. A very local and, I believe, rare insect, the two sexes of which are so strongly differentiated that they were formerly treated as separate species. The female closely resembles a *Mnais* by its colouring and shape of pterostigma, which is followed by 2 rows of cells, or more rarely by 3 rows. I possess a single female from Langkawi Island collected by Dr. Kerr, which, like the present two specimens, has the wings deeply infuscated.

Suborder Anisoptera.

19. *Anax guttatus* (Burmeister).

1 male, Penang Hill, *c.* 300 ft., 29.viii.37; 1 male, at light, 10.30 p.m., Butterworth, 20.ii.35. Distributed from S. India to the Philippines. This is the first record I have of this species coming to light.

20. *Indictinogomphus melaenops* (Selys) = *Ictinus melaenops* Selys.

1 male, Reservoir, Bukit Panchore, Prov. Wellesley, 24.viii.35, 1 female, same locality, 23.ii.35. Confined to Malaya, where it replaces the more common *Indictinogomphus rapax*. The present specimens are true to type.

Gomphidictinus gen. n. (fig. 2).

A genus of large-sized dragonflies characterised by a combination of the characters of the oriental genus *Gomphidia* and the neotropical genus *Gomphoides*, and belonging to the family Gomphidae, subfamily Ictinogomphinae (= Ictininae).

Wings densely reticulated; sectors of arculus closely apposed or actually fused at origins; arculus between the first two basal antenodals or opposite the second; all triangles reticulated, discoidal triangles 4-celled in all wings, that of fore-wing a subequilateral triangle, that of hind-wing elongated, with costal and distal sides subequal and half as long again as the basal: a supplementary sector to the discoidal triangle running as far as border of wing; *subtrigones in both fore- and hind-wings of large size and made up of* 3 *cells*; discoidal field beginning with a row of 3 cells and then continued as 2 rows to as far as half-way to nodus; CuP in fore-wing pectinated; nodus situated at centre of costa in fore-wing; anal triangle made up of 5 cells; anal loop absent; cubital nervures numerous, especially in

fore-wing; tornus obtusely produced in hind-wing; 2 rows of cells in anal field of fore-wing, 5 in the hind-wing; Riv + v and MA curving in all wings abruptly downwards to meet termen; pterostigma very narrow, of great length, unbraced. Legs short, very robust, hind femora with about 15 short robust spines. Anal appendages resembling those of *Ictinogomphus*; genitalia resembling that of *Gomphidia*, but the penis with a ventral spine as in the South American genera *Progomphus* and *Gomphoides*: anterior to the genitalia and projecting from the 1st abdominal segment is a unique quadrate lobe which overlaps the lamina and hamules. Genotype—*Gomphidictinus wheeleri* sp. n.

This new genus is of great interest as forming a distinct link between the oriental and neotropical genera of the subfamily ICTINOGOMPHINAE.

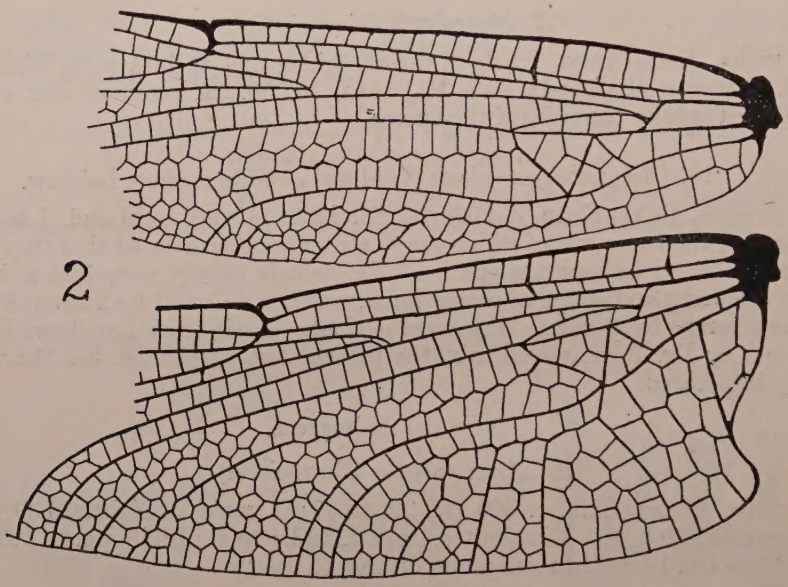

FIG. 2.—Bases of wings of *Gomphidictinus wheeleri* sp. n. male.

21. **Gomphidictinus wheeleri** sp. n. (fig. 3, *a* to *e*).

Male. Abdomen 51 mm. Hind-wing 48 mm.

Coloured velvety black marked with bright citron yellow as follows:—the lateral lobes of labrum, a stripe on the anteclypeus confluent with two large triangular spots on the postclypeus, two broad triangular spots on upper surface of frons, a broadly interrupted mesothoracic collar, short and narrow antehumeral stripes on the upper two-thirds of dorsum of thorax, diverging widely from one another below; two broad oblique stripes on sides of thorax rather widely separated by a black stripe. Abdomen black with the apices of hamules, the auricles and a small triangular spot apical to them on segment 2, the basal half of the sides of segment 3 and a broad basal annule covering the basal half of segment 7 all yellow. Occiput slightly angulated posteriorly and with a low rounded elevation on its dorsum; alar sinus with its outer ends prolonged as upwardly curved spines. Anal appendages: superiors broad at base, subcylindrical, hollowed out within and tapering to an acute point: some small spines on the under surface of apex: inferior only one-fourth the length of superiors, subquadrate, shallowly emarginate at apex. Auricles large and with a single curved spine at apex. Genitalia: a quadrate scale-like lobe projecting obliquely backwards from the border of segment 1, with crenate border and spine-like

extensions laterally; lamina short and broad, shallowly and broadly emarginate; hamules long, robust, obtuse at apex; vesicle large, projecting, with basin-like lip. Penis (see fig. 3, *a*).

Habitat: a single male, the type, Cameron Highlands Road, near waterfall, 14th mile, *c.* 1100 ft., 11.ix.37 (*Dr. Wheeler*). The genus to which this new species belongs stands nearest *Gomphidia* in which the penis is similar to that found in the S. American genus *Progomphus* except that it is devoid of the prominent ventral spine. In this new species, however, the ventral spine is present and so it bridges the gap between the two genera. In general facies it resembles *Gomphidia kodaguensis* Fraser, markings and shape of abdomen being closely similar in the two species, but the venation will easily separate them.

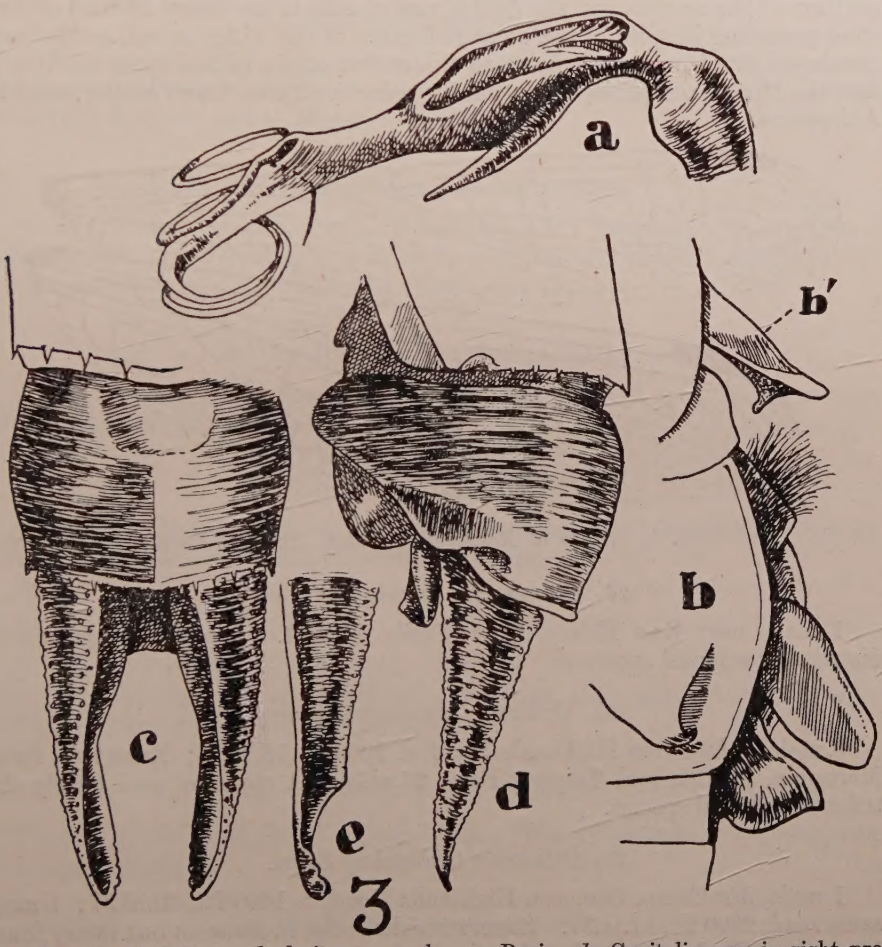

FIG. 3.—*Gomphidictinus wheeleri* sp. n. male. *a*. Penis. *b*. Genitalia seen in right profile. *b'*. Pregenital lobe. *c*. Dorsal view of anal appendages. *d*. Left lateral view of same. *e*. An appendage seen from the inner side.

22. *Macromia westwoodi* Selys.

1 male, Penang Hill, path above waterfall, 21.iii.37. This fine species is distributed throughout Malaya, Java and Sumatra and is both local and uncommon.

23. *Brachygonia oculata* (Brauer) (fig. 4).

1 male, Kuala Ketil, Kedah jungle, 22.xii.35. Very teneral. A species rare in collections which I have not had the opportunity of studying before and in which the venation of the wings is an interesting mixture of archaic and recent elements. The presence of the latter undoubtedly stamps it as a recent species and Dr. Ris was surely correct in his placing of it. The extreme narrowing of the base of the hind-wing has resulted in the loss of the proximal row of cells in the anal loop, which is quite unique in the family LIBELLULIDAE: the position of the arculus and the double row of cells in the discoidal field of fore-wing persisting in spite of the great reduction of the wing, as well as the well-developed supplements, all point to the recent origin of the species. It is in fact the finest example of evolution by reduction to be found in the suborder Anisoptera.

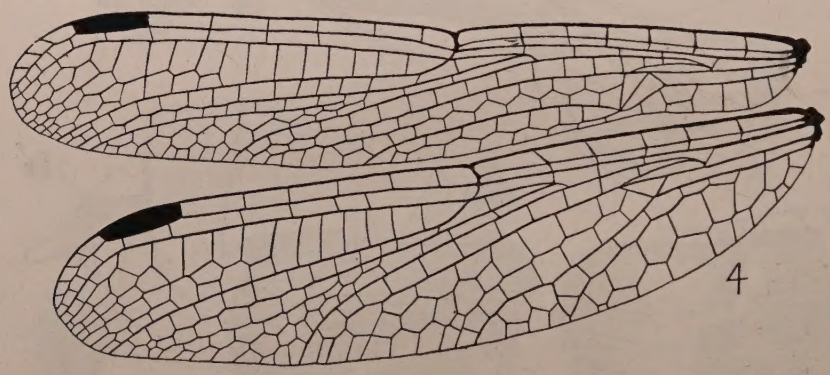

FIG. 4.—Wings of *Brachygonia oculata* (Brauer), male.

24. *Potamarcha obscura* (Rambur).

1 male, near Rest House, Arau, Perlis, 11.ii.37. A common and widely distributed oriental species.

25. *Orthetrum glaucum* (Brauer).

3 males. Cameron Highlands Road, *c.* 2000 ft. 12.ix.35; Reservoir, Bukit Mertajam, 12.i.35, and Taipeng Pass, 26.xi.35. A common and widely distributed oriental species.

26. *Orthetrum triangulare* Selys.

1 male, Jor Camp, Cameron Highlands Road, *c.* 1600 ft., 28.iii.37; 1 male, same road, 2600 ft., 11.ix.37. Same remarks as for *O. glaucum* but rarely found below an altitude of 4000 ft., this species beginning where *glaucum* leaves off.

27. *Orthetrum testaceum testaceum* (Burmeister).

2 males, 1 female. Botanic Gardens, Penang, 6.xi.37; Penang Hill, *c.* 1200 ft., 7.iii.37, and foot of Maxwell's Hill, Taipeng Pass, 6.ii.36. Less com-

mon and less widely distributed than the two last species : Malaya and Java. A plain species rarely found above 1200 ft.

28. *Orthetrum sabina* (Drury).

2 males. Near Siong, Baling, Kedah, 30.vi.35 and Taipeng Pass, 31.iii.35. An extremely common oriental species.

29. *Crocothemis servilia* (Drury).

2 males and 2 females all from lowlands of Perlis. Widely distributed at all times of the year throughout the Orient.

30. *Rhodothemis rufa* (Rambur).

A single female from Sunger Tembur, Prov. Wellesley, 15.i.38. A species of wide oriental distribution but only found singly and that rarely. I have taken it in Bombay and at places in the Nilgiris.

31. *Brachydiplax farinosa* Kruger.

1 male, Forest Reserve, Trolak, Perak, 25.vi.37. Occurring in moderately large colonies and very local; breeds in marshes and shallow weedy ponds. The present specimen is a fully adult pruinosed example.

32. *Brachythemis contaminata* (Fabricius).

A single very teneral female of this common oriental species. Reservoir, Bukit Panchore, 19.x.35.

33. *Diplacodes trivialis* (Rambur).

2 females. Reservoir Penang, 6.vi.37, and Reservoir Mertajam, 28.ix.35. Widely distributed throughout the oriental region.

34. *Trithemis aurora* (Burmeister).

3 males. Bentong K.L. Road, Pahang, 30.vi.37; Reservoir, Bukit Mertajam, 3.xi.35, and Cameron Highlands Road, 14th mile, 30.i.38. Widely distributed throughout the oriental region.

35. *Trithemis festiva* (Rambur).

1 male, Kenas Dam, K. Kangsar, 9.i.38. Widely distributed throughout the oriental region.

36. *Zygonyx malayana* (Laidlaw).

1 male, Bukit Mertajam, Reservoir, Prov. Wellesley, 24.v.36. As Laidlaw states, this species lies near *Z. mildredae* Fraser from Burma, but the two are separated by the broader base of hind-wing in the latter, where 4 rows of cells, instead of 3, intervene between the anal loop and border of wing. The recognition mark on segment 7 is absent in both species.

37. *Neurothemis tullia tullia* (Drury).

5 males and 1 female, all from the lowlands, and mainly in rice fields. A common species occurring in large colonies in paddy or marshes, and at all times of the year save during the height of the monsoon. Distributed throughout the orient but largely replaced in Indo-China by the subspecies *N. tullia feralis*.

38. *Neurothemis fulvia* (Drury).

2 females, andromorphs, Malakoff Estate, Kuala Ketil, Kedah, 9.ii.36, and Wang Tangga, Perlis, 11.ii.37. A gregarious species usually confined to bamboo jungle, where it may be seen settled in vast numbers. Strictly oriental in distribution.

39. *Neurothemis fluctuans* (Fabricius).

7 males and 1 female. Forest Reserve, Trolak, Perak, 25.vi.37; Reservoir, Bukit Panchore, Prov. Wellesley, 13.vii.35, and Taipeng jungle path, 1000 ft., 9.vi.37. Same remarks as for last but a more eastern distribution and not found west of Malaya. Local in Java.

40. *Rhyothemis phyllis phyllis* (Sulzer).

3 females. Reservoir, Bukit Mertajam, 14.xii.35; Kedah Peak, *c.* 2000 ft., 27.x.35, and Waterfall Quarry, Kedah Peak, *c.* 100 ft., 28.xi.37. Distribution, Malaya and Java. A gregarious species flying in localised swarms, generally in the neighbourhood of marshes or rank weedy ponds.

41. *Rhyothemis plutonia* Selys.

A single female, 73rd mile, Grik Road, Upper Perak, 5.xii.37. Extends from Bengal, through Burma to Malaya, being nowhere at all common. This species mimics the bee *Xylocopa* when on the wing.

42. *Rhyothemis obsolescens* Kirby.

A single female from Trolak Forest Reserve, Perak, 25.vi.37. Apparently uncommon: specimens have always come to me in singles, so that it does not appear to be gregarious like most of the other species belonging to the genus. Distributed from Lower Burma to Borneo: I have specimens from King Island, Mergwe.

43. *Pantala flavescens* (Fabricius).

A single specimen from Bukit Mertajam, Reservoir, *c.* 300 ft., 29.v.37. A very common species with a circumtropical distribution.

44. *Urothemis signata insignata* (Selys).

1 male, Bukit Panchore, Reservoir, Prov. Wellesley, 19.x.35. A local but moderately common species found flying over weedy ponds and lakes. Not common in collections, probably due to the difficulty in taking it. I have taken the subspecies *signata signata* in numbers in Western India.

DESCRIPTIONS OF NEW STAPHYLINIDAE (COLEOPT.)[1]

By Malcolm Cameron, M.B., R.N., F.R.E.S.

Aploderus indicus sp. n.

Shining, black, the elytra yellow infuscate at the base, scutellary region and postero-externally. Antennae and 3rd segment of the maxillary palpi black. Legs reddish-yellow. Length 4·5 mm.

In build, size and colour very like *caelatus* Gravenhorst, but with longer antennae, the penultimate segments as long as broad; head and thorax less punctured and with much less distinct ground-sculpture, the puncturation of the elytra finer and less close. Head almost as broad as the thorax, the eye a little shorter than the rounded post-ocular region, with a few small obsolete punctures and feeble ground-sculpture. Thorax transverse (6 : 4·5), the sides in front less rounded than in *caelatus*, along the middle with a more or less distinct keel and on each side of it with a curved superficial impression, the punctures rather large but superficial and scanty, the ground-sculpture feeble. Elytra longer (7·5 : 4·5) and broader than the thorax, a little broader than long, more finely and less closely punctured than in *caelatus*. Abdomen parallel, almost impunctate, finely coriaceous.

Darjeeling district: Ghum. Type in my collection.

Oxytelus (Tanycraerus) proximus sp. n.

Very shining, black, the elytra yellow. Antennae black, the first four segments and legs reddish-yellow. Length 5·2 mm.

Very near *discalis* Cameron, of the same lustre and colour but larger, the head more square, less transverse, the frontal margin rounded and more strongly elevated, the punctures between the antennal tubercles finer and not so close, the eye a little shorter than the rounded post-ocular region; thorax with the median sulcus much shorter, limited to the anterior half, the lateral sulci also much shorter, the punctures on the disc much larger, the sides very slightly sinuate behind, the posterior angles obtuse. From *punctipennis* Fauvel, it differs in the larger size, the strongly thickened elevated and rounded frontal margin, more sparing, smaller and not elongate punctures of the head; thorax broader, the median sulcus limited to the anterior half, the lateral shorter and less deep, the puncturation less close; the puncturation of the elytra a little coarser; the 7th sternite in the ♂ less produced in the middle and broader. ♂: head scarcely narrower than the thorax, very slightly transverse, the eye a little shorter than the rounded post-ocular region, the antennal tubercles and frontal margin strongly elevated, thickened and rounded in front, the strongly depressed clypeal region impunctate and feebly coriaceous, between the antennal tubercles with numerous small punctures, the base of the head more coarsely punctured but not rugose and without ground-sculpture. Antennae as in *discalis*. Thorax transverse (3·5 : 2·5), trapezoidal, the sides a little emarginate before the obtuse posterior angles, the median sulcus rather broad and limited to the anterior half, the lateral short, much narrower, slightly curved; sides obliquely impressed, moderately coarsely and moderately closely punctured, ground-sculpture absent. Elytra a little

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[1] Continued from 1941, *Proc. R. ent. Soc. Lond.* (B) **10** : 147.

longer than the thorax, striate-punctate at the sides, the punctures rather close and smaller than those of the thorax. Abdomen almost impunctate, the ground-sculpture very weak.

♂: 6th sternite with a pair of minute tubercles on the posterior margin which is truncate between them: 7th a little produced in the middle and truncate.

♀: unknown.

Darjeeling district: Ghum, Tiger Hill, altitude 8000–10,000 feet. Type in my collection.

Oxytelus (Emopotylus) falsus sp. n.

Shining; head black, thorax dark reddish-brown, elytra and abdomen pitchy black or pitchy brown. Antennae blackish, the first five segments and apical half of the 11th reddish-yellow. Legs reddish-yellow. Length 3 mm.

In build and lustre very like *nitidifrons* Wollaston, but of darker colour, the eyes a little larger, but shorter than the rounded post-ocular region, finely faceted, base of head with short median sulcus, the smooth clypeal region with a few fine punctures, the posterior half with coarse punctures, coarser than in *nitidifrons*, not elongate, the supra-orbital ridge produced to the base as in that species, thorax as in *nitidifrons* but with median sulcus narrower, the lateral more distinct, the punctures coarser, elytra also with coarser and deeper punctures; abdomen as in *nitidifrons*.

♂: 7th sternite a little produced in the middle, forming a short lobe with rounded apex.

Darjeeling district: Ghum. Type in my collection.

Oxytelus (Emopotylus) cadaverinus sp. n.

Rather shining; head pitchy black, the frontal region brownish-yellow; thorax dark brown, the sides broadly lighter; elytra brownish-yellow extensively infuscate posteriorly; abdomen pitchy, the posterior margins of the tergites narrowly lighter. Antennae and legs reddish-yellow, the 5th to 7th segments of the former infuscate. Length 2·5–3 mm.

Near *raffrayi* Fauvel, but larger and much darker in colour, the head shorter and differently sculptured, the thorax and elytra with coarser sculpture. Antennae as in that species. Head transverse, in the ♂ very slightly broader than the thorax, in the ♀ almost as broad, the post-ocular region broadly rounded and much longer than the small finely faceted eye; the depressed frontal region shining and impunctate, the anterior border truncate; the supra-orbital ridge extending backwards to the base and then curved inwards for a short distance; vertex with a deep sulcus in the middle, the area internal to the supra-orbital ridge closely, obliquely striate, the striae finer in the ♂ than in the ♀, the region adjacent to the sulcus with close moderate, more or less confluent punctures: thorax a little longer and so less transverse than in *raffrayi*, and with deeper sulci and yet more coarsely striate-rugose, impunctate: elytra more coarsely punctate-striate than in that species: abdomen almost impunctate, feebly coriaceous.

♂: 7th sternite with very small triangular process at the middle of the posterior margin.

Darjeeling district: Ghum, Lepchajagat. Type in my collection.

Oxytelus (Anotylus) morbosus sp. n.

Closely allied to *complanatus* Erichson, of the same colour and lustre, but with the first three segments of the antennae yellowish-brown: the sculpture of the head scarcely

differs in the two species, but the sulci of the thorax are more superficial and practically impunctate, the ridges much less distinct, at the sides the striae and rugae are much less evident, the punctures fewer, smaller and less distinct, the coriaceous ground-sculpture well marked: elytra much more finely and closely striate, the punctures much smaller and superficial: abdomen finely and closely punctured, much more so than in *complanatus*. Head in the ♂ subquadrate, slightly transverse, nearly as broad as the thorax, in the ♀ smaller, more transverse, distinctly narrower than the thorax. Length 3 mm.

♂: 6th sternite with a pair of minute tubercles before the posterior margin: 7th broadly and very feebly emarginate.

Darjeeling district: Ghum, Lepchajagat. Type in my collection.

Oxytelus (Anotylus) monticola sp. n.

Colour and lustre of *nitidulus* Gravenhorst, but differing in the following respects; a little narrower, the antennae shorter and stouter, the penultimate segments more transverse, head in both sexes less transverse, the eyes smaller, the temples longer; clypeus finely striate, between the antennal tubercles also closely striate but less finely than the clypeus, impunctate; the base closely punctured in the ♂, the punctures more or less elongate, in the ♀ much more finely and obsoletely; thorax longer, less transverse (3·75 : 3) than in *nitidulus*, the lateral sulci deeper, at the sides more deeply impressed, the ridges with a few small punctures, the sulci coriaceous, the sides finely striate; elytra longer (4 : 3), much more finely striate and more obsoletely punctured than in *nitidulus*; abdomen scarcely differing from that species. Length 2·75 mm.

♂: 7th sternite produced in the middle as a small yellowish plate with feebly rounded apical margin.

♀: 7th sternite produced triangularly in the middle with the apex rounded.

Darjeeling district: Ghum, Tiger Hill, altitude 8500–10,000 feet. Type in my collection.

Oxytelus (Anotylus) kashmiricus sp. n.

Very shining, black. Antennae black. Legs yellowish-brown, the femora and tibiae often infuscate. Length 3 mm.

Near *nitidulus* Gravenhorst, but entirely black, the head in both sexes dilated behind the eyes, these much smaller; elytra more coarsely punctured and less striate. Head in ♂ as broad as the thorax, in the ♀ a little narrower, distinctly widened and rounded behind the small eyes, before the base with a short median sulcus, on each side of it with a rounded and more superficial impression; the anterior half practically impunctate, posteriorly with puncturation much like that of *nitidulus*, the antennae as in that species. Thorax formed as in *nitidulus*, the sulci similar, the puncturation very similar but with less developed rugae at the sides: elytra much more coarsely punctured than in *nitidulus* and not so distinctly striate. Abdomen practically impunctate, the ground-sculpture feeble. Fore-parts without ground-sculpture.

♂: 6th sternite feebly broadly emarginate with broad superficial more closely punctured impression adjacent: 7th scarcely produced in the middle and feebly rounded.

Kashmir: Gulmarg. Type in my collection.

Oxytelus (Anotylus) contiguus sp. n.

In lustre and antennal structure scarcely differing from *latiusculus* Kraatz, but entirely black and also differing in the following respects: the head is of the same shape but the

frontal margin is much less developed, scarcely elevated and is not continued back beyond the posterior margin of the eye, it is not longitudinally bisulcate but before the base presents two rather large but superficial foveae and a median groove is absent: the clypeus is separated from the rest of the surface by a very obsolete transverse shining line; the sculpture is a little coarser than in *latiusculus* and is the same on the clypeus; the thorax is a little shorter than in *latiusculus* and so more transverse, the sulci much less deep, the ground-sculpture is similar but punctures are entirely absent and the ridges quite dull; the elytra are finely longitudinally striate, but with the punctures very obsolete, scarcely visible. Abdomen as in *latiusculus*. Length 1·5 mm.

♂: head larger, more subquadrate. 7th sternite produced in the middle as an acute triangular process.

♀: head smaller and rounder.

Kashmir: Gulmarg. Type in my collection.

Platystethus longicornis sp. n.

Very shining, black, the elytra yellowish-brown. Antennae black. Legs reddish-yellow. Length 3·75 mm.

A narrow shining species with longer antennae than is usual in the genus. Head a little narrower than the thorax, the eyes small, much shorter than the temples, the vertex with a small median impression, the front impunctate, elsewhere with a few rather large scattered punctures. Antennae rather long, the 2nd and 3rd segments of equal length, 4th and 5th of equal length, slightly longer than broad, the 5th stouter than the 4th, 6th to 10th as long as broad and differing but little, 11th oval, longer than the 10th. Thorax transverse (4·5 : 3), the sides obtusely angulate before the middle, straightly retracted in front and behind and coarctate with the base, along the middle with a fine impressed line, on each side of it with a row of three moderate punctures, towards the sides with a group of four or five others. Elytra longer (4 : 3) and broader than the thorax with a few small scattered punctures. Abdomen nearly impunctate, the ground-sculpture very feeble, the fore-parts without trace of ground-sculpture.

Darjeeling district: Ghum. Unique. My collection.

Bledius (Hesperophilus) hindustanus sp. n.

Similar in colour and lustre to *lucidus* Sharp but with longer thorax, the sides parallel to behind the middle, from thence gently rounded and coarctate with the base, the anterior angles more prominent; elytra a little longer, not quite so closely punctured, in other respects similar to *lucidus*. Length 4 mm.

Ferrapore. Unique. British Museum (Natural History).

Erratum.

The species *nanus* described in 1940, *Proc. R. ent. Soc. Lond.* (B) **9** : 210 as a *Holosus* belongs to *Holotrochus*, a genus of the Osoriini.

Osorius assamensis sp. n.

Very like *puncticollis* Kraatz, but the frontal margin is narrower, feebly emarginate and distinctly more coarsely crenulate, the declivous front more shining, less coriaceous, the granulations at the sides much finer and less close, the striae and rugae between the eyes finer and less interrupted, the thorax longer and less transverse, the sides more feebly

sinuate behind, the puncturation less deep and not quite so close, the elytra less closely punctured. Length 10 mm.

Assam : Shillong, altitude 6000 feet (*Beeson*). Unique. My collection.

Osorius stevensi sp. n.

Size and build of *puncticollis* Kraatz, but the front of the head much smoother, very finely coriaceous, with very few, very fine asperate punctures on each side, the interocular sculpture much less marked, the puncturation of the thorax is finer and much less close, that of the elytra much more sparing and much more superficial, the abdomen more sparingly punctured. Length 8 mm.

Nepal–Sikkim Frontier; Tonglu, altitude 10,074 feet (*Stevens*). Unique. British Museum.

Osorius peraffinis sp. n.

Very near *pectinifrons* Fauvel and only differing in the larger size (8·2 mm.) and more robust build and in the puncturation of the thorax being a little coarser and closer, that of the elytra less superficial. Perhaps a local race only.

Darjeeling : Gopaldhara, altitude 4720–6100 feet (*Stevens*). British Museum (Natural History).

Osorius masuriensis sp. n.

Near *lopchuensis* Cameron. Very similar in build, but with the sides of the thorax very slightly sinuate behind; the frontal margin is scarcely emarginate and not crenulate but with a row of small tubercles along it, the sides of the front with some small granules, the median part shining and between the antennal tubercles superficially impressed, the impression with some fine irregular rugae; the striae between the eyes broad, the interstriae not interrupted, along the middle with a broad smooth space. Thorax transverse (5·5 : 5), less coarsely and a little less closely punctured than in *lopchuensis*, not at all rugose, along the middle smooth, the posterior angle with an impression; the elytra are less closely and more superficially punctured than in that species, the abdomen also is much less closely punctured. Length 7 mm.

Mussoorie : Mossy Falls. Unique. My collection.

Osorius alticola sp. n.

Of the build of *sikkimensis* Bernhauer and *gardneri* Cameron, but differing from both in several respects. The frontal margin is truncate and strongly crenulate, the declivous front feebly coriaceous, at the sides with a few small granules, the striae between the eyes irregular, the interstriae much interrupted, here and there forming elongate granules. Thorax transverse (7 : 5), as in *gardneri*, constricted at the base as in that species, smooth along the middle, elsewhere with small rather close granules but larger and not so close as in *sikkimensis* but coarser and closer than in *gardneri*: elytra much more finely and less closely punctured than in *sikkimensis*, about as closely but more finely than in *gardneri*: abdomen as in *sikkimensis*. Length 7·75 mm.

Sikkim : Karponang, altitude 10,000 feet (*Hingston*). Type in British Museum (Natural History).

I recorded this insect as *sikkimensis* Bernhauer in 1928, *Ann. Mag. nat. Hist.* (10) **2** : 559.

Osorius mangpuensis sp. n.

Similar to *nilgiriensis* Fauvel in build but blacker, and differing in the following respects: the frontal margin is broader, almost truncate and feebly crenulate, the declivous front at the sides with larger and closer granules, the striae between the eyes much broader, the interstriae more interrupted and with a broad smooth median area, thorax with the puncturation distinctly coarser, the elytra a little more closely punctured. Length 6·2 mm.

Darjeeling district: Ghum, Mangpu. Unique. My collection.

Osorius fraternus sp. n.

Size and build of *frontalis* Fauvel, but differing as follows: the front is less shining, more coriaceous with less distinct punctures, the sculpture between the eyes similar in character but much less marked, the fovea at the posterior angle of the thorax scarcely indicated, the puncturation a little finer; the elytra much less coarsely and less deeply punctured. The whole insect is black with reddish-yellow antennae and legs. Length 5 mm.

Darjeeling: Gopaldhara, altitude 4720–6100 feet (*Stevens*). British Museum (Natural History).

SYNONYMY OF TWO PALAEARCTIC ACRIDID GENERA (ORTHOPTERA)

By B. P. Uvarov, D.Sc., F.R.E.S.

1. (*Plagiophlebis* Houlbert 1927) = *Stauroderus* I. Bolivar 1897 (**syn. n.**).

Houlbert (1927, *Encyc. sci., Thysanoceres, Dermaptères et Orthoptères* **2**: 94, 104) has proposed *Plagiophlebis* as a subgenus of *Stenobothrus* Fischer, with two species, *scalaris* Fischer Waldheim and *apricarius* L., characterised by specialised elytral venation. No type has been indicated and I select *Oedipoda scalaris* Fischer Waldheim as such, which makes *Plagiophlebis* a pure synonym of *Stauroderus* I. Bolivar 1897 based on the same type (Kirby 1910, *Syn. Cat. Orth.* **3**: 177). The limits and the characters of *Stauroderus* have been clarified by Bey-Bienko (1930, *Izvestia zap.-sibirsk. geograph. Obstch.* **7**: 7, 25, sep. reprint).

2. (*Thiopteris* Houlbert 1927) = *Mioscirtus* Saussure 1888 (**syn. n.**).

The genus *Thiopteris* Houlbert (1927, *loc. cit.*: 120, 126) was based on *Oedipoda wagneri* Eversmann 1859 and *O. venusta* Brunner 1853. I select the former as the type, which makes *Thiopteris* a pure synonym of *Mioscirtus* Saussure based on the same type.

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41, Queen's Gate, S.W.7

1942.

WEDNESDAY, October 7
" November 4
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